IN THE CLAIMS

The following claim set replaces all prior versions, and listings, of claims in the application:

1. (Currently Amended) A synchronous machine comprising:

a rotor coupled to a rotor cooling system, wherein said rotor is cooled by a rotor cooling fluid passing through said rotor;

a stator around the rotor and separated from the rotor by an annular gap between the rotor and an inner surface of the stator, and

a stator ventilation system ~~wherein the stator ventilation system~~ injecting~~s~~ a cooling gas into the stator, ~~and~~ wherein said cooling gas flows through the stator and exits the stator at the annular gap and wherein said rotor ~~being~~ is impervious to said cooling gas.

2. (Cancelled)

3. (Currently Amended) A synchronous machine as in claim 1 wherein the cooling gas flows through all of the stator gas passages.

4. (Currently Amended) A synchronous machine as in claim 1 wherein said ventilation system further comprises a ~~heat exchanger~~ plurality of baffle chambers mounted on ~~said machine~~ an outer periphery of said stator, wherein said baffle chambers direct cooling gas to said stator and between said baffle chambers, and a heat exchanger mounted on at least one of said baffle chambers and radially outward of said stator.

5. (Previously Amended) A synchronous machine as in claim 1 wherein said rotor comprises a superconducting coil, and said rotor cooling system provides the rotor cooling fluid as a cryogenic cooling fluid to said coil.

6. (Original) A synchronous machine as in claim 1 which is an electromagnetic generator.

7. (Original) A synchronous machine as in claim 1 which is a motor.

8. (Original) A synchronous machine as in claim 1 wherein said ventilation system is a reverse flow ventilation system.

9. (Previously Amended) A synchronous machine as in claim 1 wherein said ventilation system is a closed-loop system in which a cooling gas circulates through the stator and a heat exchanger in a flow path of the gas.

10. (Previously Amended) A synchronous machine as in claim 1 wherein said ventilation system is an open-loop system in which a cooling gas passes through the stator and the air gap, and exhausts to an environment outside of the machine.

11. (Currently Amended) A superconducting electromagnetic machine comprising:

a solid core rotor having a cryogenically cooled superconducting rotor coil winding;

a stator coaxial with said rotor and having stator coils magnetically coupled with said superconducting rotor coil winding, said stator coils arranged around said rotor, and said stator having cooling passages extending from an outer periphery of the stator to an

inner periphery of the stator, said inner periphery separated from the rotor by an annular air gap;

said rotor having cooling passages for a cryogenic cooling fluid;

an annular air gap between said solid core rotor and said stator, wherein said annular gap having at least one lateral opening comprising a cooling gas passage port and said annular gap being substantially open along a length of said rotor;

a stator ventilation system providing a cooling gas to said outer periphery of the stator and said passages of the stator, wherein substantially all of said cooling gas flows through said annular gap and through said cooling gas passage port, wherein said ventilation system further comprises a plurality of baffle chambers adjacent said outer periphery of the stator, wherein said baffle chambers include a first chamber having an outer cooling gas inlet port open to a source of cooling gas, and a second chamber having cooling gas inlet port open to said first chamber, and wherein said first and second chambers each have cooling gas outlets to said stator.

12. (Previously Amended) A superconducting electromagnetic machine as in claim 11 wherein the cooling gas exits the stator at said cooling gas passage port open to the annular air gap.

13. (Currently Amended) A superconducting electromagnetic machine as in claim 11 wherein said ventilation system further comprises ~~heat exchanger~~.

14. (Original) A superconducting electromagnetic machine as in claim 11 wherein said rotor comprises a superconducting coil, and said rotor cooling system provides cryogenic cooling fluid to said coil.

15. (Original) A superconducting electromagnetic machine as in claim 11 which is an electromagnetic generator.

16. (Original) A synchronous machine as in claim 11 which is a motor.

17. (Original) A superconducting electromagnetic machine as in claim 11 wherein said ventilation system is a reverse flow ventilation system.

18. (Previously Amended) A superconducting electromagnetic machine as in claim 11 wherein said ventilation system is a closed-loop system in which a cooling gas circulates through the stator and a heat exchanger in a flow path of the gas.

19. (Original) A superconducting electromagnetic machine as in claim 11 wherein said stator cooling passages are adjacent and orthogonal to said stator coils.

20. (Currently Amended) A method for cooling a superconducting electromagnetic machine having a solid core rotor including a superconducting rotor coil winding and a stator and a stator ventilation system, said method comprising the steps of:

a. cryogenically cooling the rotor coil winding;

b. cooling the stator with a cooling gas flowing through the stator, wherein said cooling gas enters an outer periphery of the stator from a plurality of baffle chambers and wherein a first baffle chamber has a cooling gas input port open to a source of

cooling gas and a second baffle chamber has an input port open to the first baffle chamber, and

c. drawing substantially all of the cooling gas out of the stator into an air gap between the stator and the rotor core, wherein the cooling gas flows through the air gap without flowing through the rotor core.

21. (Previously Amended) A method for cooling as in claim 20 wherein the cooling gas flows into an outer periphery of the stator, through stator cooling gas passages and out into the air gap.

22. (Original) A method for cooling as in claim 20 wherein said cooling gas is drawn by a fan out of the air gap and is exhausted out of the machine.

23. (Previously Amended) A method for cooling as in claim 20 wherein said cooling gas is drawn by a fan out of the air gap and is directed to a heat exchanger, and said method further comprises extracting heat from the cooling gas by the heat exchanger, and circulating the cooling gas through the stator and the heat exchanger.